REMARKS/ARGUMENTS

In view of both the amendments presented above and the following discussion, the Applicants submit that none of the claims now pending in the application is anticipated under the provisions of 35 USC § 102. Thus, the Applicants believe that all of these claims are now in allowable form.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, the Examiner should telephone Mr. Peter L. Michaelson, Esq. at (732) 542-7800 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Claims 23-28 and 39-48 are presently in the application.

The Examiner notes that claim 26 recites the limitation "the longitudinal orientation of the fiber" in line 3 and urges that there is insufficient antecedent basis for this limitation in the claim. Applicants have reviewed this contention and direct the Examiner's attention to the fact that any fiber has a longitudinal orientation, thereby implicitly providing an antecedent basis. Accordingly, the objection is considered unwarranted.

Claims 23-28 stand rejected under 35 U.S.C. 102(b) as being anticipated by Homann (USPN 5,937,732). The Examiner urges that with regard to claim 23, the reference discloses a fluid-tight body overwound as an isotensoide with a number of fiber filaments, whereby the radius of the

body varies with respect to a rotation-symmetrical axis of the structure, such that said body comprises a number of concave surface sections spaced apart from the axial ends, each having a local minimum radius, and a number of convex surface sections spaced apart from the axial ends, each having a local maximum radius characterized in that at least one concave surface section is continuously overwound with a fiber as an isotensoide.

With regard to claim 24, the Examiner urges that Homann shows that the fiber windings in the at least one concave surface section comprises a non-pressurized state of the structure a multiple number of substantially straight fiber filaments forming a hyperboloid.

With regard to claim 25, the Examiner urges that Homann shows that the fluid-tight body is quasi-geodesically (as long as there is no movement there will inherently be a quasi-geodesically amount of friction) overwound in a continuous fashion.

With regard to claim 26, the Examiner urges that Homann shows that the longitudinal orientation of the fiber along a finite length thereof is oriented substantially perpendicular with respect to the rotation symmetrical axis of the structure.

With regard to claim 27, the Examiner urges that Homann shows that the fiber in a pressurized state undergoes torsion with respect to its longitudinal center line, so that substantially one side of the curved fiber remains in

contact with the body in the at least one concave surface section.

With regard to claim 28, the Examiner urges that Homann shows that in a pressurized state there is reversal of the side of the curved fiber which is in contact with the body in the at least one concave surface section.

The rejections of the Examiner set forth above are deemed incorrect for the following reasons:

Applicants' invention is directed to a fiber-reinforced gas or fluid-tight structure with a varying radius with regard to an axis of symmetry such that the body comprises a number of convex and concave surface sections, or at least one concave section, and by overwinding the body with filaments such that at least one concave surface section is continuously overwound with a fiber as an isotensoide, a substantially isotensoidal body is obtained which has excellent performance in terms of volume, pressure and mass.

This performance is attained since in isotensoidal bodies the applied fibers are tensioned in exactly the same magnitude, so that optimal use of material properties is made. Accordingly, the body may endure high pressures and has a relatively large shape stability. Variations of the pressure inside the body results in variation of the envelope stiffness. By the formation of rotationally symmetrical bodies with varying radius in an isotensoidal way, advantageous applications may be found. More specifically, elongated objects can be formed making the

bodies available for a wide variety of applications. The combination of flexibility of the body and the ability to endure pressure loadings makes it suitable for flexible pipes and hydraulic applications.

The Homann reference discloses a procedure for overwinding a cylinder wherein fibers 9 run between end caps 4 and 5. The end caps are provided with arms allowing the fibers to return. The fibers disclosed are oriented in a direction substantially parallel to the longitudinal axis of the cylinder (see column 7, lines 7-12 of the reference). The offset of the arms in the circumferential direction results in a deviation of several degrees. When inflating the cylinder, a radial expansion is limited due to a number of non-elastic ring shaped elements. As a result, a bellow shaped structure is obtained wherein the fibers are subjected to a radial force causing the end caps to move to each other.

Contrary to the position of the Examiner, it is noted that the structure disclosed by Homann is not continuously overwound as an isotensoide. Since the fibers are overwound using the arms at the end caps, the fibers are not isotensoide. Furthermore, the presence of non-elastic ring-shaped elements does not allow the fibers to be overwound as an isotensoide. Due to the force balance in an isotensoide fiber structure, ring-shaped elements are superfluous in the structure described in the present invention.

Applicants also contend that the filament structure set forth in Figure 7 of the Homann reference discloses a hyperboloid. More specifically, it can be seen that the structure is not invariant over a rotation along the longitudinal axis of the cylinder, but has a helix structure. Accordingly, the pressurized structure of applicants set forth in claim 23 is .0 completely novel and unobvious in view of the Homann reference.

Claims 39-48 are former claims 29-38 which were inadvertently withdrawn during the response to the preceding office action. The remarks of Applicants regarding the Homann reference are equally applicable with respect to claims 39-48.

In light of the foregoing contention of applicants, it is urged that the rejection of claims 23-28 be withdrawn and that claims 39-48 be allowed and the application passed to issue.

Respectfully submitted,

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